

In the claims:

1. (Currently Amended) A rotary die apparatus for use with a first rotary die having a first axis of rotation and a second rotary die having a second axis of rotation parallel to the first axis of rotation comprising:

a base;

a plurality of elongate columns, each column having a first end and a second end defining a [first axis] path of [movement] travel along a length thereof, the first end of each column mounted to the base in spaced relationship to one another;

at least one cross member positioned transverse to the first and second axis of rotation, [the entire] each cross member [is] movably engaged with respect to at least two of the plurality of columns for movement along the [first axis] path of [movement] travel;

at least one first modular die support mounted directly to the base separate and independent of the plurality of columns, the at least one first modular die support in a location spaced [relation to] from the columns and in exclusive rolling, vertically upwardly supporting engagement with the first rotary die; and

at least one second modular die support mounted to the cross member in a location spaced [relation to] from the columns, the at least one second modular die support adjustably loading force between the first and second rotary dies while in exclusive rolling, vertically downwardly pressing engagement with the second rotary die.

2. (Cancelled)

3. (Previously Presented) The apparatus of claim 1 wherein the first die is in

rolling engagement with the second die.

4. (Currently Amended) The apparatus of claim 3 wherein the first rotary die further comprises a first end surface and an [opposing] opposite second end surface, the first die having a radially raised flange adjacent to at least one of the first and the second end surfaces.

5. (Currently Amended) The apparatus of claim 4 wherein the raised flange operably engages an alignment surface associated with the first modular die support to limit linear longitudinal translation of the first die along the first axis of rotation.

6. (Currently Amended) The apparatus of claim 4 wherein the raised flange defines a shoulder operably [engages] engageable with a corresponding end of the second die to limit linear longitudinal translation of the second die along the second axis of rotation.

7. (Currently Amended) The apparatus of claim 1 wherein the cross member further comprises a first cross member and a second cross member, the first and second cross members positioned on mutually exclusive, opposing sets of columns located in spaced relationship with respect to one another.

8. (Currently Amended) The apparatus of claim 1 further comprising a pressure member operably engaged with the cross member for selectively adjusting the position of the cross member along the [first axis] path of [movement] travel.

9. (Currently Amended) The apparatus of claim 1 wherein the first and the second modular die supports each further comprise a first bearing assembly and a second bearing

assembly positioned in [opposing relation along the axis of rotation] longitudinally spaced locations adjacent each end of the corresponding first and second rotary dies, each bearing having at least two rollers [having] with axes of rotation extending substantially parallel to one another and each roller angularly spaced from one another [from] with respect to the axis of rotation of the corresponding first and second rotary dies.

10. (Currently Amended) The apparatus of claim 1 wherein the first rotary die and the second rotary die each further comprise a first end surface and an [opposing] opposite second end surface, each die having an elongate journal extending from the first and second end surfaces along the axis of rotation; and

the first and second modular die supports each further comprising a pair of [opposing] cylindrical roller bearings positioned along the axis of rotation, each cylindrical roller bearing operably engaged with one of the journals for permitting free rotation of the die about the axis of rotation.

11. (Original) The apparatus of claim 10 further comprising at least one spacer positioned between the first and the second modular die supports.

12. (Currently Amended) A rotary die apparatus comprising:
a frame having a base, a plurality of elongate circular columns having a first end and a second end defining a first axis of movement along a length thereof, the first ends of the columns removably mounted with respect to the base and the second ends of the columns removably mounted with respect to a cover, at least one cross member, [the cross member

positioned transverse to a second rotary die having a second axis of rotation,] the [entire] cross member [is] movably [engaged] engagable with respect to at least two of the plurality of circular columns for movement along the first axis;

a first rotary die having a first axis of rotation, the first die having a first end surface and an [opposing] opposite second end surface, [and] at least one raised radial flange adjacent at least one of the first and second end surfaces;

a second rotary die having a second axis of rotation positioned in substantially parallel alignment with the first axis of rotation and [in rolling engagement] rollingly engaged with the first die, the second die [in operable engagement] operably engaged with the radial flange of the first die to limit linear translation of the second die along the second axis of rotation, the cross member positioned transverse to the second rotary die having the second axis of rotation;

a first modular die support removably mounted directly to the base in a location spaced [relation to] from the columns, the first die support having a first bearing member and a second bearing member, the second bearing member separated from the first bearing member along the first axis of rotation, the first and second bearing members each having at least two rollers in exclusive rolling vertically upwardly supporting engagement with the first rotary die, each roller having [axes of rotations] an axis of rotation substantially parallel to one another and angularly spaced from one another [from] with respect to the first axis of rotation, at least one of the first and second bearing members [in operable engagement] operably engaged with the raised radial flange to limit movement of [a] the first rotary die along the first axis of rotation; and

a second modular die support removably mounted directly to the cross member in a location spaced [relation to] from the columns, the second die support having a first bearing and

a second bearing member, the second bearing member separated from the first bearing member along the second axis of rotation, the first and second bearing members each having at least two rollers in exclusive rolling vertically downwardly pressing engagement with the second rotary die, each roller having [axes] an axis of rotation substantially parallel to one another and angularly spaced from one another [from] with respect to the second axis of rotation.

13. (Currently Amended) An improved rotary die apparatus for use with a first rotary die having a first axis of rotation and a second rotary die having a second axis of rotation, the second axis of rotation parallel to the first axis of rotation, the apparatus having a base, a cover opposite the base, a pair of opposing cross members positioned transverse to the first and second axis of rotation, [wherein] the [entire] cross members [are] moveable between the base and the cover, and a pressure member operably engaged with the cover and the cross members, the improvement comprising:

four elongate rods having a first end and a second end, the first end mounted to the base [in] parallel and spaced [relation to] from one another, and [a] the second end mounted to the cover defining a length, the rods having a uniform cross section along the length between the base and the cover;

a first modular die support having a first bearing and a second bearing positioned [in opposing relation along] spaced from one another with respect to the first axis of rotation, each bearing mounted directly on the base in a location spaced [relation to] from the rods, each bearing having at least two rollers, each roller having [axes] an axis of rotation substantially parallel to one another and angularly spaced from one another with respect to the first axis of

rotation, the [bearing] rollers [are] positioned [in rolling engagement] to be rollingly engaged with the first rotary die for permitting free rotation of the first rotary die about the first axis of rotation; and

a second modular die support having a first bearing and a second bearing positioned [in opposing relation along] spaced from one another with respect to the second axis of rotation, each bearing mounted to one of the cross members [in] spaced [relation to] from the columns to be rollingly engaged [in rolling engagement] with the second rotary die for permitting free rotation of the second rotary die about the second axis of rotation.

14. (Currently Amended) The apparatus of claim 13 wherein the first die further comprises:

a raised radial flange adjacent at least one of a first and a second [opposing] end of the first die, the radial flange [in operable engagement] operably engaged with the first modular die support to limit linear translation of the first die along the first axis of rotation.

15. (Original) The apparatus of claim 14 wherein the second die operably engages the radial flange of the first die to limit linear translation of the second die along the second axis of rotation.

16. (Currently Amended) The apparatus of claim 13 wherein the first and second bearing of the second modular die support [bearings] comprise at least two rollers, each roller having [axes] an axis of rotation substantially parallel to one another and angularly spaced from one another with respect to the second axis of rotation.

17. (Previously Presented) The apparatus of claim 13 wherein each of the first and the second bearings of the second modular die support further comprise a cylindrical roller bearing for rolling engagement with a journal on the second die.

Claims 18-35 (Cancelled)

36. (Previously Presented) The rotary die apparatus of claim 1 wherein the plurality of columns comprise four columns.

37. (Previously Presented) The rotary die apparatus of claim 1 wherein the elongate columns are uniform and circular in cross section along the length.

38. (Previously Presented) The rotary die apparatus of claim 12 wherein the plurality of columns comprise four columns.

39. (Previously Presented) The rotary die apparatus of claim 12 wherein the elongate columns are uniform in cross section along the length.

40. (Currently Amended) A rotary die module for use with a first rotary die having a first axis of rotation and a second opposing rotary die having a second axis of rotation, the rotary die module comprising:

a base;

four parallel elongate rods having a first end and a second end defining a first axis of movement along a length thereof, the first ends of the rods mounted to the base, the rods [in opposing and] spaced [relation] with respect to one another defining two pair of opposing rods

with one pair of rods adjacent each end of the base, the second ends of the rods mounted to a cover, the rods having a uniform cross section along the length between the cover and the base;

a pair of opposing cross members, each cross member positioned on [opposing] one pair of rods and extending transverse to the first and second axis of rotation, each cross member [is] movably engaged on the [opposing] rods for movement [of the entire cross member] along the first axis of movement;

a first modular die support having a first bearing and a second bearing, the second bearing positioned [in opposing relation along] spaced from the first bearing with respect to the first axis of rotation, each bearing having at least two rollers, each roller having [axes] an axis of rotation substantially parallel to one another and angularly spaced from one another with respect to the first axis of rotation, each bearing [is] attached directly to the base [in] spaced [relation to] from the columns [and adapted] to receive and rotatably engage the first rotary die;

a second modular die support having a first bearing and a second bearing, the second bearing positioned [in opposing relation along] spaced from the first bearing with respect to the second axis of rotation, each bearing having at least two rollers, each roller having [axes] an axis of rotation substantially parallel to one another and angularly spaced from one another with respect to the second axis of rotation, each bearing [is] directly attached to one of the cross members [in] spaced [relation to] from the rods[, the second modular die support adapted] to receive and rotatably engage the second rotary die; and

a pressure member engaged with the cover and the cross members for controlling movement of the second modular die support along the first axis of movement.

Claims 41-45 (Cancelled).

46. (New) A rotary die apparatus comprising:

a base;

a lower die support bearing mounted directly to the base;

a first elongate rotary die rollingly supported on the die support bearing;

a second elongate rotary die rollingly supported with respect to the first rotary die,

the first and second rotary dies having a maximum outer diameter;

a plurality of elongate columns mounted directly to the base, at least a pair of columns adjacent one longitudinal end of the first and second elongate rotary dies, the pair of columns spaced from one another by a distance greater than the maximum outer diameter of the first and second rotary dies with sufficient clearance to allow removal and replacement of at least one of the first and second rotary dies longitudinally between the pair of columns;

a cross member extending between and movably engaged with the pair of columns;

and

an upper die support bearing mounted to the cross member for rolling engagement with the second rotary die.
